CHAPTER 1

Introduction

1.1 Purpose. This engineer technical letter (ETL) establishes uniform guidance to describe methods, procedures, and formats for the preparation of construction cost estimates, Independent Government Estimates (IGEs), construction contract modification estimates and the Total Project Cost (TPC). The definitions and appropriate policies applicable to the wide variety of projects encompassed in the Civil Works Program are described in Engineer Regulation (ER) 1110-2-1302, Civil Works Cost Engineering, and ER 1110-2-1150, Engineering and Design for Civil Works Projects. The technical details for preparing cost estimates are provided in this ETL to accomplish the requirements of ER 1110-2-1302.

1.2 Applicability. This ETL applies to U.S. Army Corps of Engineers (USACE) commands having design and/or construction responsibilities for civil works projects.

1.3 Distribution Statement. Approved for public release, distribution is unlimited.

1.4 References. Required and related references are at appendix A.

1.5 Scope.

1.5.1 This ETL provides technical guidance and addresses all phases of construction cost estimating from planning phases through modification estimates during construction through to project completion for all civil works projects. The term “construction” includes remedial action environmental projects, dredging, and other construction and fabrication-related work often implemented within all types of contracts.

1.5.2 This ETL includes guidance for preparing and reporting the TPC and computing maximum project cost legislated by Section 902 of the Water Resources Development Act of 1986. The basis for computing maximum total project cost is in appendix G of ER 1105-2-100, Planning Guidance Notebook.

1.5.3 For the purposes of this document, the term cost engineer applies to all individuals, whether employed by the Government or under contract to the Government, who are engaged in the preparation or review of cost estimates.

1.6 Program Specific Requirements. To support the civil works missions addressed in ER 1105-2-100, guidance for civil works estimates is provided in ER 1110-2-1302 and ER 1110-2-1150. Appendix A contains other pertinent references. Other

regulations govern military estimates and hazardous, toxic, and radioactive waste and will not be discussed in this ETL.

1.7 Document Organization. The ETL consists of 9 chapters, 10 appendixes, and a glossary.

1.7.1 Chapter 1 provides the scope, civil works project requirements, background, and responsibilities of construction cost estimating.

1.7.2 Chapter 2 discusses the types of cost estimates employed during construction cost estimating. Virtually every study, project, or activity funded under the civil works project requires a project cost estimate. The cost estimate is an essential tool that serves as a foundation in accomplishing management objectives, budgetary submissions, and economic analysis.

1.7.3 Chapter 3 applies to construction estimates and describes the basic principles and responsibilities for developing any cost estimate.

1.7.4 Chapters 4 and 5 provide direct and indirect cost development guidelines.

1.7.5 Chapter 6 provides guidance on identifying other costs that must be included in the cost estimate, i.e., risk, contingency, and escalation.

1.7.6 Chapters 7 and 8 discuss IGEs and IGEs for contract modifications.

1.7.7 Chapter 9 discusses various levels of review. Certain reviews are mandatory and directed by headquarters (HQ).

1.7.8 The following appendixes contain supportive material to the main text in this ETL: Appendix A, References; Appendix B, Total Project Cost Summary; Appendix C, Tri-Service Automated Cost Engineering Systems; Appendix D, Preparation of Dredge Cost Estimates; Appendix E, Sample Estimate Sheets and Forms; Appendix F, Sample Quality Review Checklist; Appendix G, Cost and Schedule Risk Analysis; Appendix H, Sample Checklist for Cost Estimate Preparation or Reviewer Checklist; Appendix I, Protests or Litigation Concerning the Independent Government Estimate; and Appendix J, Job Office Overhead Template.

1.8 Background. Project cost estimates shall be prepared as though the Government were a prudent and well-equipped contractor estimating the project. Therefore, all costs, which a prudent, experienced contractor would expect to incur, should be included in the cost estimate. This philosophy prevails throughout the entire project cycle--from planning through completion of the project. Without an accurate estimate or schedule, successful project management can be compromised. Each estimate shall

be developed as accurately as funding and time constraints allow, in as much detail as can be assumed, and based upon the best information available. The objective through all phases of project planning, design, and construction is to develop cost estimates to serve as a project management tool as well as establish a “fair and reasonable” cost to the Government.

1.9 Project Delivery Team.

1.9.1 USACE is committed to effective management of the scope, quality, cost, and schedule of each project by using project delivery teams (PDT). ER 5-1-11, USACE Business Process, presents the requirements for establishing a PDT for all projects. Each PDT is led by a project manager (PM) and composed of everyone necessary for successful development and execution of all phases of the project. The PDT may be drawn from more than one USACE district and may include specialists, consultants/contractors, stakeholders, or representatives from other Federal and state agencies. Team members are chosen for their skills and abilities to successfully execute a quality project. The project cost estimate shall be recognized as a major management tool for establishing, monitoring, and managing costs from the study phase through project completion.

1.9.2 Civil works projects are planned and approved following ER 1105-2-100 and are designed following ER 1110-2-1150.

1.9.3 The efforts of all PDT members shall be coordinated to ensure that sufficient project information is provided for all cost estimates.

1.9.4 Cost engineers are an important member of the PDT. The cost engineer is expected to have a clear understanding of those responsibilities and areas where he or she can contribute. It is imperative that the team concept be enhanced and supported by each PDT member. As such, the cost engineer is encouraged to lead in cost issues and provide ideas for cost control and sharing measures.

1.10 Responsibilities.

1.10.1 Division Cost Engineer

- Act as Major Subordinate Command (MSC) point of contact in communicating with HQUSACE cost engineering offices.
- Receive, interpret, disseminate, and implement cost engineering guidance, direction, and correspondence from higher authority in a timely manner.
- Conduct field reviews of district commands execution of cost quality management and recommends necessary corrective actions when warranted.
- Support PM in the certification for project cost estimates and cost changes and provide Project Review Board technical support on project costs as required.

- Review proposed awards of negotiated contracts and modifications requiring award approval above the authority delegated to district commanders.
- Review bid results, protests, and mistakes in bids. Evaluate and make recommendations on district actions for bid protests and mistakes in bid. Provide analysis and recommendations and take necessary actions as required.
- Participate in HQUSACE Cost Engineering Steering Committee and lead in subcommittee efforts.
- Provide technical assistance to districts and MSC elements on cost engineering issues. Consolidate and disseminate MSC-wide historical cost data.
- Provide technical support to HQUSACE on development, upgrade, maintenance, and implementation of Microcomputer Aided Cost Estimating System (MCACES).

1.10.2 Chief, Cost Engineering

1.10.2.1 The chief of each district cost engineering office is responsible for providing cost engineers to support the PDT. The chief shall ensure that all appropriate estimating activities, including site visits prior to construction and during construction, have been adequately funded and scheduled in the Project Management Plan (PMP) for the estimate development. When cost engineering products are to be obtained by architect-engineers (A-E) contracting, the chief shall ensure that the A-E contract statement of work requires the A-E to comply with USACE estimating policies of ER 1110-2-1150, ER 1110-2-1302, and this ETL.

1.10.2.2 The cost engineer should serve in an advisory capacity to the PDT, contracting office, and office of counsel related to contract acquisition strategy, bid schedules and biddability, TPC, value engineering, disputes, and claims.

1.10.2.3 Preparation and review of construction cost estimates from design start through project completion is the responsibility of the district cost engineering office. In concert with this responsibility, the cost engineer must be accountable for the completeness, quality, accuracy, and reasonableness of the cost estimate. This relates to all respective estimates, whether developed by the cost engineering office, other governmental offices, or by contracted estimating firms.

1.10.3 Estimating by Non-USACE or Engineering Firms. Preparation of Government estimate products are always inherently the responsibility of the Government. When it is necessary to contract services for estimate products, such services will be provided by competent firms or agencies experienced in cost and schedule engineering. The key responsibilities of any contracted estimate by other firm or agency include:

- Adherence to ER 1110-2-1150, ER 1110-2-1302, and this ETL.
- Providing an experienced cost engineer as lead for the product(s).
- Coordination with Corps cost engineering office during product development.
- Developing construction estimates at feasibility and beyond in the latest approved MCACES software.
- Developing construction schedules at feasibility and beyond utilizing industry accepted software programs.
- Receiving and adhering to Government approval of the Civil Works Work Breakdown Structure (CWWBS) in the early stage of estimate development.
- Maintaining and conducting an internal quality control/quality assurance (QC/QA) program addressing cost, schedule, and risk as contractually applicable.
- Preparing cost reports addressing contract scope, product development processes, assumptions, methodologies, concerns, and results.

1.10.4 Project Delivery Team

1.10.4.1 Members of the PDT shall provide the cost engineer estimates for the CWWBS feature codes 01 (Lands and Damages), 30 (Planning, Engineering, and Design), and 31 (Construction Management) for incorporation into the Total Project Cost estimate. All costs for these activities will be developed by the appropriate office and coordinated with the PM to ensure all schedules and commitments for the project are fulfilled.

1.10.4.2 Each PDT member is responsible for defining confidence/risk levels associated with their office products. The PDT shall assist the cost engineer in identifying cost-related project items including but not limited to:

- Project risks.
- Project contingencies.
- Project schedule.
- Construction schedules.
- Contract phasing.
- Bid schedule.
- Contract completion dates.

1.11 Technical Reviews. In accordance with ER 1110-2-1150, technical reviews are required and/or recommended during various phases of project development through the life of the project. These review requirements are more thoroughly discussed within ER 1110-2-1302. Technical reviews are to be coordinated by the PM and supported by the PDT. The reviews are instrumental in ensuring adequate product quality for the project phase under development. There are various cost quality processes that are

utilized for this purpose and are discussed more thoroughly in chapter 9. They include a district quality control review or DQC (also known as a peer review), an independent agency technical review (ATR), and an independent external peer review (IEPR).